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ABSTRACT

The smiles and laughter of an infant form the beginning of the developmental process of interpersonal interaction and socialization. The earliest smiles are automatic expressions of internal states, but soon infants' smiles are communications of pleasure. The developmental changes in smiling and laughing in early infancy reflect the rapidity with which these emotional responses become important elements in the interactions between the infant and his social environment. The importance of smiling and laughter is demonstrated by clinical observations of their absence; distressed or frightened infants do not smile or laugh. Recent investigations point to humor as an essential component of the normal growth process. Humor provides the individual with the opportunity to re-experience the gratifications of cognitive and interpersonal mastery. An important determinant of children's humor responses is the degree to which the humor requires them to use their cognitive abilities maximally. Humor is conceptualized here as a reassertion of one's competence and its antithesis, anxiety, as a painful state of helplessness. Humor is frequently used to dispell anxiety; by secondary reinforcement humor becomes a learned motive to experience mastery in the face of anxiety--the "whistling in the dark" phenomenon. Humor development parallels the stages of cognitive and psychosocial development. Humor is used to circumvent prohibitions, express aggression indirectly, and can be used to facilitate learning. (KM)

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FROM THE INFANT'S SMILE TO MASTERY OF ANXIETY: THE DEVELOPMENTAL ROLE OF HUMOR

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In a television interview on April 19, 1959, the great Zen Master Suzuki was discussing Zen Buddhism. He described how Zen Buddhism began. It was during a lecture by Buddha when he held out a bouquet of flowers which had been handed to him. None of the pupils sitting before Buddha understood what Buddha meant by holding out the flowers with his outstretched arms -- except one old monk. This monk looked up at Buddha and smiled. Buddha smiled back. And that is how Zen Buddhism began. The story may not help very much in the understanding of Zen Buddhism, but it beautifully illustrates the meaningfulness of the simple smile, and the understanding that can occur between two people with but a smile. The story points up the interpersonal character of the smile with the immediacy and depth of communication which it can achieve. This form of communication is a striking contrast with language which, as Koestler so rightly noted, actually restricts communication.

By now a number of investigators have observed that shortly after birth the young infant begins to smile. These first smiles appear to be autochthonous in the sense that they are responses to pleasant internal states. Very shortly thereafter, however, the infant begins to smile and laugh at external objects, particularly the

familiar face of the mother. These responses are the initial expressions of pleasure and awareness of another person. They usher in the entire developmental process of interpersonal interaction and socialization. From them evolves the ever-expanding range of affective communication processes. It may well be that the earliest smiles of the newborn infant, say of one week, are merely automatic expressions of internal states. But it is not much later that the infant's smiles are communications of pleasure at the appearance of the familiar face of the doting mother. In her little poem, "Infant Prodigy, Margaret Fishback expressed the sentiments of all mothers, "At six weeks baby grinned a grin that spread from mouth to eyes to chin, and Doc, the smarty, had the brass to tell me it was only gas."

Sentiment aside, we know that the earliest smiles and laughs are innate responses to pleasant sensations both internal and external. However, we also know that these innate responses to pleasant rhythmic tactile and auditory stimulation become associated with social expressions of pleasure. Thus, Sroufe and Wunch have found that, by the third and fourth trimester of life, visual and social stimuli have become the primary stimuli for laughter. These authors also noted that infants'

laughter quickly becomes responsive to simple incongruities in social situations. For example, an infant learns to laugh at the sight of his mother sucking on his bottle or when she plays the peek-a-boo game.

Edith Jacobson (1946) has noted how laughter, the more intense twin of smiling, occurs most primitively in two phases. The initial phase of "thrill" involves "anxious tension mixed with quickly increasing pleasure which dissolves the fears." Though partly derived from motor pleasure, the major emotional pleasure component of this phase is associated with memories of previous similar experiences of laughter or associated with motor movements such as tossing in the air or the sudden reappearance of mother in peek-a-boo. The second phase, the final discharge, comes as a surprising climax which is experienced as a sudden relief with intense pleasurable convulsive motor discharge in laughter. What is particularly striking in this early developmental period is how learning becomes involved with these innate pleasurable responses to become increasingly social processes. Thus, the developmental changes in smiling and laughing in early infancy reflect the rapidity with which these emotional responses become important elements in the interactions between the infant and his social environment.

Humor, which evolves from these early smiling and laughing situations, has generally been regarded as epiphenomenal in child development. Humor has always been viewed as an incidental and relatively trivial activity in human affairs. True, the smiling and laughing infant is a most appealing object of delight and affection, just as an adult with a "good sense of humor" is seen as having an attractive personality. Despite the growing interest in humor, little concern about if and how humor contributes to the developmental process has been manifested to this point.

Oddly enough, the best evidence which demonstrates the importance of humor as expressed by smiling and laughing is given by clinical observations of their absence. When young infants fail to smile or laugh in appropriate situations, it is fairly evident that these infants are not experiencing the situation as pleasurable but rather as distressing or frightening. Sroufe and Wunch noted this fact when they observed that infants who were distressed cried in response to stimuli normally evoking laughter. Wolff also reported that distressed infants when tickled cried instead of laughed. A number of clinical studies by Bowlby, Mahler and Ritvo, and Provence dealt with the fact that institutionalized

infants and infants lacking mothering failed ever to smile or laugh. They relapsed into a state of unresponsiveness and helplessness, and rarely interacted with anyone except by crying. One wonders what the long-term effects are of these early depressed states where the infants cannot learn to use smiling or laughing as so-called "social releasers" to evoke positive responses in others. Restrictions in the use of smiling and laughing as the premordial roots of humor and affective communication during these critical periods of child development may well have significant effects upon emotional development. One can assume that these early experiences of exchanging pleasurable contacts with others are the basic determinants of what ultimately becomes a sense of humor -- or the lack of one.

It is indeed a giant step from the innate elemental reactions of infants to pleasing stimulation to a fully developed sense of humor in adults. The developmental steps between the two phases are relatively unexplored. But in this paper, I propose to present a formulation of the development of humor drawn from diverse sources which, if it does not add much to our understanding of the evolution of humor, at least will call attention to the problem.

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Investigations of Edward Zigler, our students, and myself, along with a rapidly increasing number of studies by others, point to humor as an intrinsic and essential component of the normal growth process. It is not epiphenomenal; it is a critical segment of the growing repertoire of evolving behavior patterns available to the child. As a process of adaptation, humor provides the individual with the opportunity to re-experience the gratifications of cognitive and interpersonal mastery. The child learns that humor, like play, is a source of pleasure at each stage of development by momentarily re-experiencing the mastery of functions and relations of earlier stages. By the time adulthood is attained, the sources of these states of mastery become myriad, the forms and techniques of the humor become so subtle that it is impossible to recognize their archaic antecedents. As Berlyne and others have suggested, humor has close affinities with other psychological processes like play, curiosity, exploratory behavior, and art in their unique ways of relating to the environment in a pleasure-giving manner. The motivational bases for these different behavior processes appear clearly to be the same. What differentiates one from the other are the structural properties and the techniques. Whether in reality or

in fantasy, and whether under stress or relaxation, humor reasserts one's mastery over the environment. In fact, humor flourishes best when fertilized by newly mastered anxieties as many sages have long observed.

What is unique about humor is the way in which it expresses pleasure by the momentary achievement in the sense of cognitive or interpersonal mastery. This appears to be the common path which goes back to early infancy. Piaget, for example, commented that the first experience of cognitive success by the infant was expressed by a smile. He also noted that whenever there is a developmental change in a child's cognitive functions which he has mastered, he laughs as he re-experiences this new achievement. Piaget maintained that smiling and laughing always accompany a child's cognitive masteries from early infancy onward.

Based on Piaget's concepts of assimilation and accomodation in cognitive development, Shultz and Zigler demonstrated that infants between 8 and 18 weeks smiled and vocalized maximally when they could successfully assimilate visual stimuli. In our own research studies, we have applied this notion of effectance motivation as presented by White to the investigation of humor development. We

confirmed the hypothesis that an important determinant of children's humor responses is the degree to which the humor requires them to use their cognitive abilities maximally. We presented cartoons to children between the ages of 8 and 13 and recorded their mirth responses, preferences, and degree of comprehension. We found that as children grew older, they enjoyed and laughed at cartoons which were increasingly difficult to understand. Cartoons which were too easy did not present a cognitive challenge and were least appreciated.

From the viewpoint of theory, of which there are a great many about humor, our conceptualization can be traced back to Aristotle. He conceived of humor as being due to the "sudden feeling of triumph which comes with the sudden perception of a superiority in us by the comparison with the inferiority of others or our own former inferiority." It was restated by Hobbes in 1640 in his definition of laughter; "a sudden glory arising from some conception of some eminency in ourselves, by comparison with the infirmity of others, or with our own formerly." More recently, Kris expressed the same view of humor from a psychoanalytic position: "What was feared yesterday and mastered is laughed at today." Although this is often classified under theories of humor emphasizing

superiority, there is a shift of emphasis in our view to a sense of mastery over what one was formerly anxious about.

We, thus, have respectable philosophical precedents for our conceptualization of humor as a reassertion of one's competence. Empirical data from different areas provide meaningful support for the antithesis between humor as a gratifying state of effectance and anxiety as a painful state of helplessness. The clinical findings of the helpless state of infants who lack warm mothering and who also never smile or laugh reflect this antithesis. Recent experimental studies of learned helplessness in animals and humans have demonstrated that when a individual's responses cannot control painful events or reinforcers, his behavior is characterized by depression and passivity. These individuals have serious difficulty not only in reacting adaptively, but in learning. In the face of their state of helplessness, they view all of their interactions as ineffective. Thus, their view of the environment is one of anticipatdd pain and incapability to master the environment. Just as humor has frequently been viewed as faith in one's mastery of fate, learned helplessness is a state characterized by resignation to fate. Based upon a number of animal studies, Seligman has suggested

that learned helplessness may provide a model for reactive depression in man. Numerous animal studies have demonstrated that the way to prevent this state of learned helplessness in animals is by prior mastery and learning. Analogously, Seligman recommends that therapy for reactive depression in man is to help the patient feel that he is an effective human being and to believe that his responses can produce the gratification that he desires. In a recent study, Harter, Shultz, and Zigler found that normal children manifest their gratification derived from a sense of cognitive competence by smiling but Harter could find no such smiling behavior in retarded children.

Other empirical findings tend to support the view that humor is a mode of reasserting one's mastery. Lefcourt, for example, found that individuals who have cognitive views of themselves as being in control or masters of their own fate, so-called "internals," smiled and laughed more at humor than did so-called "externals" who conceived of themselves as incapable of controlling external events.

On the basis of the hypothesized antithesis between humor and anxiety, we can appreciate how humor is frequently used to dispell anxiety. By secondary reinforcement humor becomes a learned motive to experience mastery in

the face of anxiety. It is a "whistling in the dark" phenomenon. Man has learned to laugh and joke in order to feel effective and through humor he will try to recapture previous feelings of mastery when he is threatened. Humor helps man to rise above his present state of pain. How else can we explain gallows humor as in the joke about the man who is about to be shot by a firing squad. When asked if he would like a last cigarette, he refuses with "No thanks, I'm trying to give up smoking." Or, how can we explain the many instances found in recorded history where ritual laughter was the prescribed form of behavior when individuals were put to death. Victoroff, the French sociologist, noted that aged parents in Sardinia were expected to laugh when immolated by their own children. In Phoenicia, parents were also expected to laugh when their children were immolated. Victoroff reported that, in India, individuals were expected to laugh heartily when mounting their ritual pyre. Clearly the laughter represents the mastery of the fear of death, and gallows humor performs a similar function.

A striking example of how laughter and humor serve as assurances that everything is alright is reported as an incidental finding in the interpersonal research studies of Stanley Milgram. In these experiments,

individuals who were forced to give what they thought were extremely painful shocks to others suddenly burst out laughing in the face of their great stress. These uncontrolled outbursts of laughter were perhaps examples of the "whistling in the dark" phenomenon serving to reassure oneself that it is not serious and that everything will be alright.

A proper delineation of the course of humor development from the viewpoint of our pleasure-in-mastery formulation requires some demonstration that it reflects the normal growth process. We need to show that the progressive development of humor corresponds to the timetable of maturation and reflects a sequence of increasing effectiveness in intellectual and social functioning. Unfortunately, we have only suggestive evidence at the present time to support the validity of our formulations.

Investigations of the relationship of humor to cognitive development has recently attracted the interest of behavioral scientists with Piaget's conceptualization of stages in cognitive development as the major framework. Piaget's interest was clearly not in humor but in cognitive growth. Yet, as I indicated before, he often noted the incidental finding that laughter and smiling accompanies cognitive success in infants.

In a recent Ph.D. thesis, Park applied Piaget's stages of cognitive development in children to a categorization of children's riddles at different ages. She viewed the changes in riddles used by children of different ages as manifestations of the cognitive patterns associated with Piaget's developmental periods, namely, pre-operational, concrete, and formal operational. Although all age groups used all types of riddles, each age group tended to emphasize one type over the others. For example, kindergarteners emphasized riddles of causal relations, whereas 2nd graders preferred those of logical relations. It was not until 7th or 8th grade that riddles of psychological relations predominated. At the same time, riddle content reflected cognitive developmental periods of the children.

In several studies, McGhee compared the relation of humor comprehension and appreciation of 5-, 7-, and 9-year-old boys with the degree of their acquisition of operational thinking in Piagetian terms. His general findings are that, as one would expect, children who are more more developed cognitively are better able to understand most types of humor. However, this correlation between cognitive development and humor comprehension

does not necessarily mean a corresponding increase in appreciation of such humor.

In our own research studies, we have used the hypothesis of effectance motivation as a necessary condition for the enjoyment of humor. We have established that children's humor responses are greatest when they have to use their cognitive abilities the most. For example, in one study by Zigler, Levine, and Gould, we found that the humor most appreciated and which evoked the most laughter in 2nd-, 3rd-, 4th-, and 5th-graders is that which makes the greatest cognitive demand and is at the upper limit of the child's ability to comprehend. It is the humor which lies at the growing edge of their capacities that they enjoy the most.

It is when children are just beginning to master language that their jokes involve playing with words. In her clinical observations of humor of children at various ages, Wolfenstein has described how the devices of joking vary with age. She has associated what children at different ages require for satisfactory joking with particular critical problems and conflicts of children at those different ages. For example, between the ages of 6 and 11, children are intensely preoccupied with smartness and dumbness. It is at this time that they

most enjoy moron jokes and riddles which are simply humorous puzzles. At age 4, children find the shifting of names from boy to girl a good joke which can readily be traced to 3-year-olds calling a boy a girl and vice versa. A good dirty joke for children of 4 or 5 is to tease someone with "You're a doody," or "You make peepee on the floor." For adolescents who have more or less fully developed cognitively, anecdotes replace riddles and comic mimicry.

, Wolfenstein has described in some detail what she considers to be the developmental phases of joking and the use of the joke facade. According to her, the child must find ways to gratify his impulses while disclaiming responsibility for them. He does this by an increasing indirection of expression. He will attribute the performance of naughty deeds to other children rather than to himself and ultimately to an entirely fictitious character. Frequently, even authority figures are made responsible for the deeds. As an illustration, she describes a sequence of dirty jokes of children from ages 4 through 11 to demonstrate the increasing complication of the joke facade. She uses excretory activities as the theme since this is what children are largely preoccupied with in their dirty jokes. "For a four-

overcome infirmity and fear is to be found in the person of the circus clown. Children have great fun laughing at his grotesque features and dress, his apparent clumsiness, and the silly tricks he plays on his partners. In his self-debasement and his pratfalls, the circus clown dramatically, but in humor, expresses the concerns and achievements of children over their physical inadequacy. Thus, they laugh at the clown as they laugh at the physically deformed and handicapped.

A recent episode in the new TV show "The Electric Company" beautifully illustrates how hilarious it is for children who have just mastered counting to see an adult fail in the task of counting to "4." In this sequence, the marvelous clown, Bill Cosby, masterfully makes a fool of himself by repeatedly counting only three children overlooking a fourth child behind him. The children scream with glee that there are four children and he only counted three.

We know far too little about the social aspects of humor development. Yet, the issue of mastery or effectance, as White prefers to call it, is no different in the psychosocial sphere than it is in the cognitive. Eriksen's theory of the sequence of phases of psychosocial development may be as applicable to humor development as

Piaget's cognitive stages are.

Socialization in terms of self-control and proper social conduct is well documented by the developmental changes which occur in the expression of aggression through humor as the child matures. One of the first things we learn about humor is that it is a way of enjoying things, activities, and thoughts which are otherwise forbidden. We learn to circumvent prohibitions of conduct by being humorous. Thus, young children will violate social prohibitions by exposing themselves, making fun of other children's immaturities, or telling jokes about other children's social indiscretions. The aggression in the humor of young children is direct and open. Poking fun, teasing, taunting, and even physical attacks are all forms of aggression in children's humor. But, as they grow, and increased internalization of social controls occurs, the humor of children becomes less direct, and the children dissociate themselves increasingly from the aggressive impulses in the humor. The jokes become more impersonal and aggression is more indirect. From open teasing and poking fun, the humor is transformed into anecdotes and the subtleties of witty or satiric remarks. In this fashion, the expression of aggression in humor reflects the maturing mastery o

one's own impulses.

Thus, as Freud pointed out, the development of humor is characterized by the increasing use of indirect expressions of aggression shifting from motoric to verbal attack. The latter he has called "tendentious" humor. The indirect expression of aggression in humor is achieved by what Freud labeled the "joke work" or "joke facade." The construction of a joke which children must learn involves techniques like absurdity, incongruity, puns, and plays on words which in themselves give pleasure by providing a cognitive challenge to resolve. But Freud's great insight was to recognize that this joke facade, although in itself gratifying, serves as a distraction from the underlying aggressive or sexual theme. As Freud put it, "I hope I have now also shown that the absurdity-techniques of jokes are a source of pleasure."

Not unlike his use of alcohol, psychedelic drugs, and states of ecstasy, man has pursued laughter and humor to enjoy the moments of pleasure through self-glorification and feelings of effectance. As with drugs and alcohol, he has learned that humor and laughter may be used not only for momentary pleasure but also to overcome anxious and painful moments. Skinner has, in fact, developed a world view based upon those basic behavioral processes

by which organisms learn to repeat those activities which reduce painful or potentially dangerous stimuli. But this is not meant by any means to depreciate the importance of the pursuit of humor for its own sake and for the pleasure it gives.

The social uses of humor however are myriad as we well know, not only to relax and relieve anxiety, but even to facilitate learning. The most dramatic example of the latter is the enormous success of the children's programs such as "Sesame Street" and "The Electric Company." Through these programs, children are taught the alphabet, reading, counting, and conceptualization in the context of funny or ridiculous situations. The humor holds the child's attention while he is learning. I wonder if more significant learning could be achieved with humor if the children actively participated in the activity. The learning would occur not so much because the humor kept the children passively attentive, but as cognitive and social achievements in their own rights. In the context of providing a cognitive and social challenge to children, humor can facilitate learning. What I am suggesting is that humor could be used very effectively in the classroom.

In summary, we suggest the conceptualization of two

components in the development of the humor process. The first component is the innate pleasure in mastery. The second is the learned "whistling in the dark" in which we use humor to restore feelings of mastery when we are anxious or threatened.

Perhaps it would be best to close this paper by a disclaimer. If I have given the impression by my remarks that I believe we know very much about humor, let me quickly dispell that impression. Humor is one of those extraordinary aspects of human affairs which has challenged not only the behavioral scientist but many other thoughful people as well. It is a paradoxical fact that a small child has no difficulty in recognizing and responding to humor while through the ages the greatest sages, philosophers, writers of literature, and now behavioral scientists have tried in vain to understand it. Yet, the behavioral scientist, who until recently has avoided investigating humor, has been viewed as the one least likely to discover what makes us laugh. As E. B. White stated, "Humor can be dissected, as a frog can, but the thing dies in the process and the innards are discouraging to any but the pure scientific mind." Robert Benchley doubted that the scientist even had a sense of humor by questioning his ability to tell what is funny. He parodied the scientists by postulating: We must understand

that all sentences which begin with 'w' are funny." Though we have not yet discovered enough about humor to allow us to dispute these great humorists, I do hope that we will someday have a better idea about which sentences are funny -- and why. It is certainly worth the effort.